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| MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004 | | | | |
| | | | EXAMINER SAID, MANSOUR M | |
| | | | ART UNIT 2673 | PAPER NUMBER 8 |

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/034,185

Applicant(s)

HA, YONG MIN

Examiner

MANSOUR M SAID

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2004.
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3 and 5-6 is/are rejected.
7) ☒ Claim(s) 4 and 7 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. **(New drawings fielded 2/10/04), Figures 1-3** should be designated by a legend such as -
-Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Response to Amendment

2. **This office action is in respond to the amendment filed on February 2, 2004.**

Claim Rejections - 35 USC § 103

3. **The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:**

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Prior Art (hereinafter referred to as APA) in view of Sagawa et al. (6,452,526 B2; hereinafter referred to as Sagawa).**

As to claim 1, APA teaches a data driving circuit of an LCD device (LCD display, (figure 1, (1)) comprising a timing controller (timing controller, (figure 1, (3)) for formatting input data (display data) so that data and gate drivers (gate driver, (figure 1, (1a)) of an LCD

panel display a picture image (LCD display, (figure 1, (1)), and outputting a selection signal (specification page 2, lines 15-21 and page 3, lines 1-16); a digital to analog converters (DA, (figure 1, (5)) for converting digital signals output from the timing controller (timing controller, (figure 1, (3)) to analog signals based on a color gray level displayed (specification page 3, lines 1-12) and receiving the selection signal (specification page 3, lines 1-12).

APA dose not expressly disclose a plurality digital to analog converters and a plurality of amplifiers for amplifying the analog image signals output from the respective digital to analog converters and outputting the amplified image signals to the LCD panel.

However, Sagawa teaches a plurality digital to analog converters (D/A converters, (figures 1 & 7, (111, 112 & 113)) and a plurality of amplifiers (amplifiers, (figures 1 & 7, (151,152,153 & 156)) for amplifying the analog image signals output from the respective digital to analog converters and outputting the amplified image signals to the LCD panel (LCD, (figure 7, (100)) (figures 1, 7 & 15; abstract; column 1, lines 10-19; column 1, lines 58-67; column 2, lines 1-23; column 6, lines 10-45, and column 14, lines 57-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Sagawa's an image signal processing circuit having plurality digital to analog (D/A) and plurality amplifiers into APA's display device so as to provide a method of capable of adjusting quickly and accurately the output amplitude of a plurality of digital-analog converters (column 2, lines 65-67).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sagawa as applied to claim 1 above, and further in view of Kwon (6,577,293 B1).

APA and Sagawa teach all **claim 2** except a plurality of multiplexes for selecting a signal output.

However, Kwon teaches a plurality of multiplexes (MUXs, (figure 10B, (80)) for selecting a signal output (column 6, lines 58-67 and column 7, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Kwon's LCD display having a plurality multiplexes into APA's modified device so that the external control signal to output the selected one to the pixels (column 7, lines 1-11).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Sagawa as applied to claim 1 above, and further in view of Mitani et al. (5,714,953; hereinafter referred to as Mitani B1).

As to **claim 3**, Sagawa teach all claimed limitation except that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image.

However, Mitani teaches that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image (figures 2-10; abstract, column 5, lines 33, column 7, lines 4-15; column 7, lines 25-67; column 9, lines 40-65, and column 16, line 54 through column 17, line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Mitani's teaching into APA's modified system so as to provide a composite D/A converter capable of effecting the D/A conversion with high precision

Art Unit: 2673

in a relatively small pattern occupancy area even when the number of conversion bits is large (column 4, lines 63-67).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Prior Art (hereinafter referred to as APA) in view of Sagawa et al. (6,452,526 B2; hereinafter referred to as Sagawa), and further in view of Kwon.

As to claim 5, APA teaches a data driving circuit of an LCD device (LCD display, (figure 1, (1)) comprising a timing controller (timing controller, (figure 1, (3)) for formatting input data (display data) so that data and gate drivers (gate driver, (figure 1, (1a)) of an LCD panel display a picture image (LCD display, (figure 1, (1)), and outputting a selection signal (specification page 2, lines 15-21 and page 3, lines 1-16); a level shifter (level shifter, (figure 1, (4)) for amplifying voltage levels of signals output from the timing controller (timing controller, (figure 1, (3)) (specification page 3, lines 1-16); a digital to analog converters (DA, (figure 1, (5)) for converting digital signals output from the timing controller (timing controller, (figure 1, (3)) to analog signals based on a color gray level displayed (specification page 3, lines 1-16) and receiving the selection signal (specification page 3, lines 1-12).

APA dose not expressly disclose a plurality digital to analog converters and a plurality of amplifiers for amplifying the signals output from the respective digital to analog converters and outputting the amplified signals to the LCD panel.

However, Sagawa teaches a plurality digital to analog converters (D/A converters, (figures 1 & 7, (111, 112 & 113)) and a plurality of amplifiers (amplifiers, (figures 1 & 7, (151,152,153 & 156)) for amplifying the analog image signals output from the respective digital

Art Unit: 2673

to analog converters and outputting the amplified image signals to the LCD panel (LCD, (figure 7, (100)) (figures 1, 7 & 15; abstract; column 1, lines 10-19; column 1, lines 58-67; column 2, lines 1-23; column 6, lines 10-45, and column 14, lines 57-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Sagawa's an image signal processing circuit having plurality digital to analog (D/A) and plurality amplifiers into APA's display device so as to provide a method of capable of adjusting quickly and accurately the output amplitude of a plurality of digital-analog converters (column 2, lines 65-67).

APA and Sagawa do not teach expressly disclose a plurality of multiplexes for selecting a signal output.

However, Kwon teaches a plurality of multiplexes (MUXs, (figure 10B, (80)) for selecting a signal output (column 6, lines 58-67 and column 7, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Kwon's LCD display having a plurality multiplexes into APA's modified device so that the external control signal to output the selected one to the pixels (column 7, lines 1-11).

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA, Sagawa in view of Kwon as applied to claim 5 above, and further in view of Mitani et al. (5,714,953; hereinafter referred to as Mitani B1).

As to claims 6-7, As best understood, APA, Sagawa and Kwon teach all claimed limitation except that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image.

However, Mitani teaches that the digital to analog converter serving to obtain a multigray (64 gray or 6 bit), intermediate gray (16 gray or 4 bit), and a low gray (2 gray, 1 bit) image (figures 2-10; abstract, column 5, lines 33, column 7, lines 4-15; column 7, lines 25-67; column 9, lines 40-65, and column 16, line 54 through column 17, line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Mitani's teaching into APA's modified system so as to provide a composite D/A converter capable of effecting the D/A conversion with high precision in a relatively small pattern occupancy area even when the number of conversion bits is large (column 4, lines 63-67).

Allowable Subject Matter

9. Claims 4 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments filed on 2/10/04 have been fully considered but they are not persuasive. On page 9, Applicant argued that the references do not disclose the claimed limitations, such as "a plurality of digital to analog converters for converting digital image

Art Unit: 2673

signals output from timing controller to analog image signals based on a color gray level displayed and receiving the selection signal”

However, Examiner respectfully disagrees for the following reasons; APA clearly shows on that a timing controller to digital to analog (figure 1, (3)), which is controlling the D/A converter, (figure 1, (5)) for converting a digital image signal (digital image signal, which considered to convert to a digital image) based on a color gray level (specification page 3, 1-16), and receiving the selection signal (video signal and clock signal, (figure 1)) (specification page 3, (1-12).

APA dose not expressly disclose a plurality digital to analog converters

However, Sagawa teaches a plurality digital to analog converters (D/A converters, (figures 1 & 7, (111-116); column 1, lines 10-19 and column 6, lines 20-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Sagawa’s an image signal processing circuit having plurality digital to analog (D/A) into APA’s display device so as to provide a method of capable of adjusting quickly and accurately the output amplitude of a plurality of digital-analog converters (column 2, lines 65-67).

The combination of all references fairly discloses the claimed limitation, and therefore all references should be taken in combination and into individually. The Applicant cannot show non-obviousness by attacking references individually where, as here the rejections are based on combination of references. **In re Keller, 208 USPQ 871 (CCPA 1981).**

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Mansour M. Said** whose telephone number is **(703) 306-5411**.

The examiner can normally be reached on Monday through Thursday from 8:30 a.m. to 6:00 p.m. The examiner can also be reached on alternate Friday from 8:30 a.m. to 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Shalwala Bipin**, can be reached at **(703) 305-4938**.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Mansour M. Said** whose telephone number is **(703) 306-5411**.

Art Unit: 2673

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Shalwala Bipin**, can be reached at **(703) 305-4938**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:


(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought Crystal Park II, 2121 Crystal Drive, Arlington, VA, Six Floor (Receptionist)

14. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 customer service Office
Whose telephone number is (703) 306-0377.

April 30, 2004

Mansour M. Said


BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600